

Farmland accumulation and rural household income: Evidence from the Red River Delta region of Vietnam

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Electronic supplementary material

Supplementary Figure S1
Supplementary Tables S1–S3

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Table S1. Name and definition of the variables in the regression models

Variable	Definition	Scale
Dependent variables		
Accumulation_D3	1 if the farmland area of the household has decreased, 2 if the farmland area of the household has not changed, 3 if the farmland area of the household has increased	metric
Independent variables		
Household level		
Age_hh	age of household head	metric, in years
Gender_hh	gender of household head (1 = male; 0 = otherwise)	binomial
Education_hh	years in the school of household head	metric, in level
Household_size	number of household members in persons	metric
Household_labor	number of household laborers	metric
Agri_household_labor	number of household laborers working in farming	metric
Water_pump_D	if household has a water pump (1 = yes; 0 = otherwise)	binomial
Tractor_D	if household has a tractor (1 = yes; 0 = otherwise)	binomial
Other_assets_D	if the household has other assets for agricultural production (1 = yes; 0 = otherwise)	binomial
Household_save_D	if household has saving (1 = yes; 0 = otherwise)	binomial
Access_to_credit_D	if households has access to credit (1 = yes; 0 = otherwise)	binomial
Non_farm income_D	if the household has a non-farm income before farmland accumulation (1 = yes; 0 = otherwise)	binomial
Number_plots	number of plots before farmland accumulation	metric
Province level		
ThaiBinh	if household in ThaiBinh province (1 = yes; 0 = otherwise)	binomial
HaNam	if household in HaNam province (1 = yes; 0 = otherwise)	binomial
HaiPhong	if household in HaiPhong province (1 = yes; 0 = otherwise)	binomial

Source: Authors' own compilation

Table S2. Multicollinearity check

Variable	VIF	1 / VIF
Household-level		
Age_hh	1.49	0.67
Gender_hh	1.12	0.89
Education_hh	1.29	0.78
Household_size	1.93	0.52
Household_labor	2.29	0.44
Agri_household_labor	1.74	0.57
Water_pump_D	1.74	0.57
Tractor_D	1.12	0.89
Other_assets_D	1.44	0.69
Household_save_D	2.37	0.42
Access_to_credit_D	1.38	0.72
Non_farm income	1.25	0.80
Number_plots	1.46	0.68
Province level		
ThaiBinh	2.26	0.44
HaNam	1.73	0.58
Mean	1.64	–

VIF – variance inflation factor

Source: Authors' own compilation.

Table S3. Quality test for propensity score matching

Group and matching algorithm	Pseudo R^2		LR test (P -value)		Mean standardized bias		Percent bias reduction
	before matching	after matching	before matching	after matching	before matching	after matching	
Decreasing group = treatment; Non-participating group = control							
NNM	0.412	0.027	0.000	0.282	33.941	7.045	79.242
KBM	0.412	0.027	0.000	0.272	33.941	8.186	75.880
Radius	0.412	0.024	0.000	0.378	33.941	7.599	77.610
Increasing group = treatment; Non-participating group = control							
NNM	0.478	0.064	0.000	0.371	54.232	13.307	75.462
KBM	0.478	0.052	0.000	0.587	54.232	10.633	80.394
Radius	0.478	0.046	0.000	0.699	54.232	9.900	81.746

NNM – five nearest neighbor matching with common support and replacement; KBM – kernel matching with common support and band width 0.06; radius matching with common support and band width 0.06; LR – likelihood ratio

Source: Authors' own compilation from the analysis of the survey data

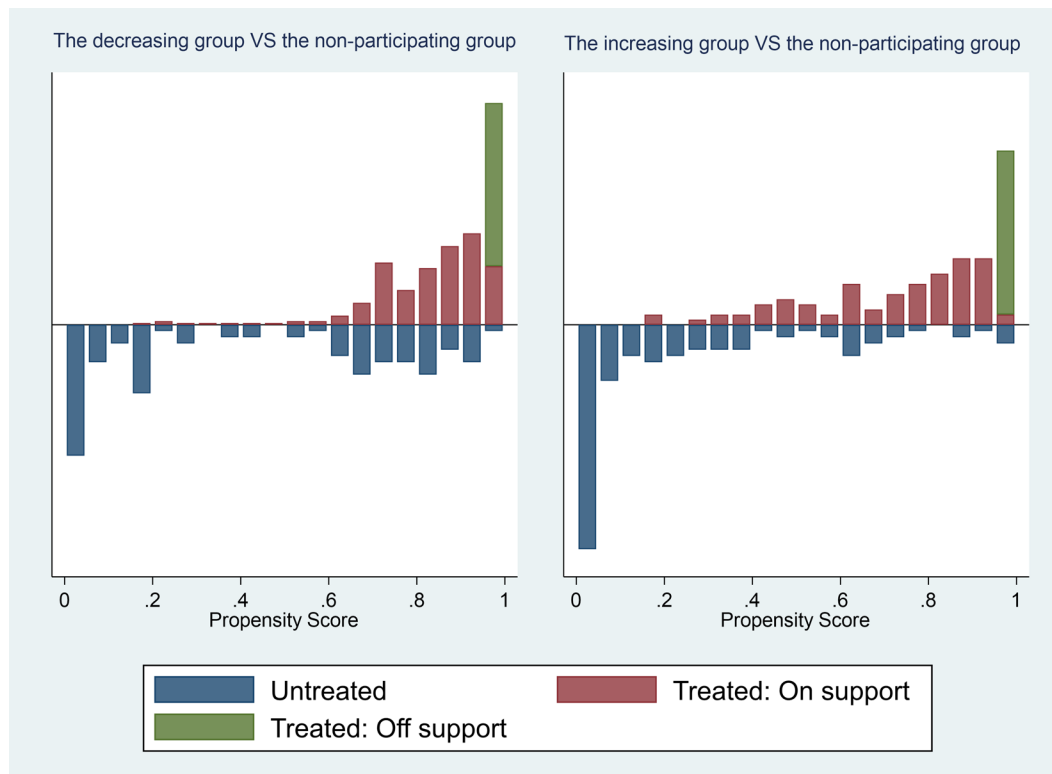


Figure S1. Propensity score distribution and common support for propensity score estimation by group

Treated: on support – households with the accumulation of agricultural land that have a suitable match; Treated: off support – households with the accumulation of agricultural land that does not have a suitable match; Untreated – households without the accumulation of agricultural land

The decreasing group *vs.* the non-participating group – decreasing group = treatment and non-participating group = control; the increasing group *vs.* the non-participating group – increasing group = treatment and non-participating group = control

Source: Authors' own compilation from the analysis of the survey data